

ABSTRACT

A PRIME-NUMBER-BASED METHOD AND APPARATUS FOR GENERATING RANDOM NUMBERS

Random numbers are used for a variety of purposes and play key roles in systems such as simulation studies, information processing, communication, and encryption. Truly random numbers are generally the result of processes that cannot be successfully repeated to generate the same sequence of results, and thus are unpredictable. Pseudo-random numbers, on the other hand, are easily replicated as the output of deterministic processes. Such a series of pseudo-random numbers will eventually repeat itself in perpetuity once it has exhausted its cycle length. The claimed invention introduces a new class of random numbers called idem-random numbers that have many of the essential characteristics of random numbers but which may be successfully replicated at different locations and at different times and which will never repeat themselves. The claimed invention uses the characteristics of prime and prime-like numbers to create endless sequences of idem-random numbers.

Idem-random numbers are produced by a.) identifying a seed prime or prime-like number, b.) identifying a process or condition for determining a subsequent prime or prime-like number, c.) applying that process or condition in an iterative fashion to yield a sequence of prime or prime-like numbers, d.) identifying a mathematical relationship or property which can be applied to two or more numbers in that prime or prime-like number sequence, and e.) applying that mathematical relationship or property to the sequence of numbers to provide a set of idem-random numbers. Optional application of a distribution-transformation process may beneficially create final idem-random numbers with specified distribution characteristics.